FORUM

Furthering the Well-Being of Farm Animals

Animal well-being is a major concern of the public, especially since the introduction of intensive confinement—keeping large numbers of livestock or poultry in one area. The U.S. food animal industry—with an estimated worth of $100 billion a year—is concerned too. But there is little scientific information that can be used to address those concerns.

The ARS national program "Animal Well-Being and Stress Control Systems" is designed to fill that gap. Begun in 1994, the program's long-range goal is to develop measures of animal well-being to be used for evaluating and possibly improving the way farm animals are raised.

Farmers and representatives from the beef, dairy, swine, and poultry industries met with ARS scientists last year to help set the program's research priorities, which can be viewed on the World Wide Web at http://www.nps.ars.usda.gov/programs/105s2.htm.

There are five ARS locations in this program: Clay Center, Nebraska; Columbia, Missouri; Lubbock, Texas; Mississippi State, Mississippi; and West Lafayette, Indiana. But there are links to numerous ARS researchers in other parts of the United States, such as Dean M. Anderson in Las Cruces, New Mexico (see feature story in this issue, page 4).

Anderson's use of electronic signals to round up cattle minimizes stress on the cattle and their handlers. He uses satellite signals and Global Positioning System (GPS) receivers to locate the cows, while electronic "turn signals" come through microphones in special collars worn by the cows.

Anderson teaches a course in low-stress animal management and is a student of Temple Grandin, Burt Smith, and Bud Williams, experts in low-stress animal handling. Grandin recently visited the ARS lab at Lubbock and also participated in an ARS "Healthy Animals 2000" symposium at Beltsville, Maryland, along with Julie Morrow-Tesch, an ARS animal scientist at Lubbock.

Grandin advocates thinking, seeing, and hearing like a cow to improve the design of cattle facilities—the holding lots, the various ramps, walkways, alleyways, and corridors livestock pass through en route to trucks, feedlots, and slaughterhouses. She has been known to crawl through these passages to look for things that might alarm animals.

Despite her unorthodox methods, Grandin is simply encouraging operators of farms, feedlots, and particularly slaughterhouses to use common sense and good husbandry practices. We want to do our part as scientific researchers to contribute to the efforts of people like her, who are improving animal well-being through a combination of research and skilled observations.

Just as Grandin has found that sometimes a simple adjustment is all that is needed—like tying down a chain that is moving and rattling, bothering the cattle—ARS researchers at Mississippi State found they could help chicks thrive by lowering water lines. The proper height helps chicks coordinate their breathing and swallowing, especially in hot weather when they may be panting. The chicks drink more water and don't lose their appetite, ensuring normal growth.

You find solutions like this only if you take the time to observe animals in their daily lives.

Morrow-Tesch doesn't use GPS to observe cattle behavior; she uses night-vision goggles to spot individual cattle in densely populated feedlots. From her mobile trailer lab parked in the feedlot, she can observe the animals day or night with the help of the night goggles and special tape that reflects when struck by invisible infrared light. The cattle can't see her, and they're accustomed to the trailer, so they continue their natural behavior.

She also places video cameras in commercial feedlots to record animal behavior. In one such project, 24-hour-a-day observation of cattle showed that switching their standard morning feeding time to sunset reduced aggressive behaviors by almost half. In dry weather, the pushing and shoving that occurs among cattle stirs up dust. The slashing of aggressive behaviors brought dust levels well below allowable limits.

Jack Nienaber, of Clay Center, also films livestock behavior. And he uses automated weighing feeders to record how much feed livestock eat, and automated sensors to monitor livestock temperature and heart and respiration rates. This data reveals the thermal stress level of livestock and will be useful in managing cattle in feedlots.

In West Lafayette, ARS scientists are observing responses of different genetic lines of swine to handling and transport to market. They are correlating behavior with physiological measurements, which could lead to an objective measure of anxiety.

In Columbia, ARS researchers are studying how appetite stimulants help pigs cope with stress during the fragile neonatal period. Also, new dietary supplements have been found to help piglets fight disease and other stresses. Improving survival by one piglet per litter is worth about $400 million a year for the swine industry.

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